

US Army Medical Research and Materiel

Technology Available for Licensing



Features and advantages:

- Provides reliable protection against the ricin toxin without undue side effects in mice
- Ricin A vaccine alone effectively immunizes against lethal effects of aerosol-administered ricin in mice
- Could potentially produce A and B chains by recombinant means using *E. coli* or yeast cultures

Patent Status

Vaccine Against Ricin Toxin

This invention provides a vaccine against the pathogenic effects of ricin toxin which is contained in castor bean seeds. One version of the vaccine contains the ricin A chain and is essentially free of the ricin B chain. The other, although it primarily contains ricin B chain, also contains some of the A chain.

Ricin is a highly toxic glycoprotein that contains A and B subunit chains that bind to receptors. The toxic part of ricin is contained in the A chain. However, the A chain is made much more toxic when it is attached to the B chain because the B chain functions to bind the toxin to target cells and, perhaps, assists in translocation into the cell. A first generation toxoid vaccine composed of whole ricin treated with formaldehyde is in pre-clinical evaluation. However, while efficacy appears adequate, safety concerns including the use of a highly lethal toxin as a starting material and potential side effects, indicate a need for a new vaccine. The toxic properties of the A chain were inactivated by formalin alone without heating, in contrast to the toxoid vaccine. The A chain vaccine given alone protected against both systemic and aerosol challenge in mice. The B chain vaccine alone protected against systemic challenge, but not from aerosol challenge.

Patent No.: 5,453,271

Available

From: www.uspto.gov

Issued: September 26, 1995

Docket No.:

Point of Contact

RIID 92-134. The ricin toxin. Since the separate chains are less toxic than the whole ricin, the invention may be safer than the toxoid vaccine.

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KEYWORDS: ricin; A chain; B chain; vaccine

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